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PROSPECTIVE POPULATION GROWTH NATIONAL CAPITAL REGION

NATIONAL CAPITAL COMMISSION

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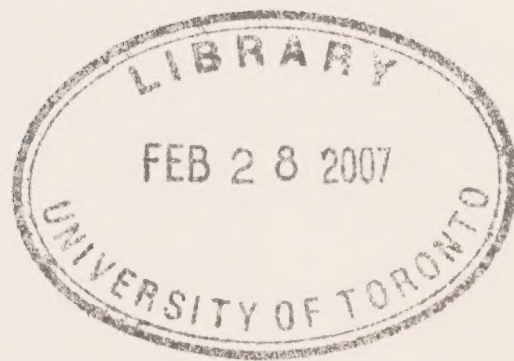
PROSPECTIVE POPULATION GROWTH
IN THE NATIONAL CAPITAL REGION



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W. T. PERKS AND B. N. KAPOOR
NATIONAL CAPITAL COMMISSION
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the University of Toronto by
Derek J.W. Little
President, Municipal Planning
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PROSPECTIVE POPULATION GROWTH

NATIONAL CAPITAL REGION

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INTRODUCTION

Many long-range planning decisions affecting the National Capital Region must rest on a foundation of the best available forecast of population growth. This study takes a fresh look at the factors influencing such growth in the 1,800 square-mile area surrounding Ottawa and Hull, and suggests that population will increase at a somewhat slower rate than envisaged in a number of recent reports commissioned by various authorities in the Region.

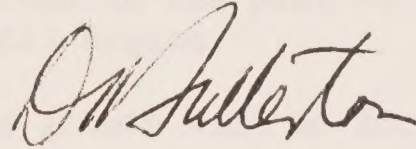
Sections I and II of this report are devoted to a discussion of recent trends and factors most likely to shape the rate of population growth in the future. The report examines the forces of growth in the postwar period; how they have altered in magnitude and nature in the last five or six years; how very recent government policies could affect the Region's growth prospects; and how certain significant trends seem to be developing. In Section III, a number of possible growth projections are discussed, following which a 'most likely' set of population and employment figures are suggested. In Section IV, these projections are compared to forecasts made by consultants during the recent years, including those contained in the "Economic Prospects Report" (1963) and the "Ottawa Central Area Study (1969).

It might well be asked why we feel compelled at this time to disagree with these earlier forecasts. One obvious reason is the possible impact on population of the cuts in federal employment announced last summer. Yet of more importance, perhaps, is our concern about the rigour of the demographic or economic analysis contained in most of the reports, and in particular the limited awareness evidenced of the many differences between the Capital of Canada and other capitals of the world and other cities in Canada.

Other reasons for questioning the earlier estimates might also be cited. Consultants' reports often reflect the client's enthusiasm and belief in the virtues of boom. A more significant attitude is perhaps one which compels many forecasters to over-compensate for low estimates made by their predecessors. Ten and fifteen years ago planning studies tended to underestimate future growth in this and other areas - having been proven wrong by subsequent events, few care to risk errors of under-estimation.

We realize that the forecasting of population trends is a very uncertain science at best, and we are uncomfortably aware that we at the NCC have some responsibility for earlier population projections. The euphoric atmosphere created by the rapid growth of the Region during the past decade no doubt would have affected anyone in the forecasting business. However, we do think there has been a change in the wind, and that those vitally interested in the growth of the Region should have access to our latest assumptions and projections. Those of differing views can of course modify the assumptions as they see fit.

This report, prepared by W. T. Perks and B. N. Kapoor, is the first of a planned series of papers to be issued from time to time by the Commission.



Douglas H. Fullerton,
Chairman.

December, 1969.

SUMMARY

- The National Capital Region is entering a period of slower population growth. The most important factor in such growth will continue to be employment in the public service, and in this respect Government anti-inflation policies are likely to exercise important restraining effects during, and even beyond, the 1970s. Furthermore, anticipated increases in federal expenditures are less likely than in the past to result in expanded population in the National Capital Region.
- Another important influence on population growth will be increasing labour participation ratios (particularly among females). This rising ratio - a world-wide phenomenon - will have a negative effect on the component of population growth normally attributable to newcomers in the Capital. In recent years, migration into the area was numerically very significant, but with expected changes in labour participation it will likely decline or may even be reversed to become a net emigration.
- While some further diversification and expansion in certain segments of the private sector of the local economy can be expected, the locational advantages of Ottawa for industry are still such that only modest optimism seems warranted in this regard.
- The current population projections of NCC are summarized below. The more important expectations and assumptions underlying these projections are as follows:
 - growth in Federal Government employment for the 1972-1996 at an average rate of 1.6% compounded annually, (compared to recent rates of 3% and more);
 - labour participation ratios increasing over time, from 37.8% in 1968 to 40.0% in 1996;
 - slightly increasing diversification in the local economy, reflected in a stepping-up of the ratio of non-government to government employment from 2.544 in 1968 to 2.675 in 1996;
 - a lesser rate of population growth through natural increase, due to birth rates being substantially lower than those of the fifties and early sixties.
- The main basis for our population projections are the estimates of future total employment - i.e., the level of population will primarily be a function of total job opportunities in the Region. First, we estimate Government employment rising from an assumed, constant level of 63,200 in the period 1968-72, to 93,550 in 1996. Total regional employment is then calculated to reach 343,750 by 1996. Finally, population estimates are made by applying participation ratios to total employment (but also allowing for some 'independent' population growth between 1968 and 1972).

National Capital Region		
	Population	Federal Government Employment
<hr/>		
1968	593,000	63,200
1971	620,000	63,200
1972	628,000	63,200
1976	660,000	68,260
1981	705,000	74,580
1986	750,000	80,900
1991	805,000	87,300
1996	860,000	93,550

Growth estimates less optimistic than the foregoing result when it is assumed that virtually no further diversification (or expansion relative to federal employment) will occur in the private sector (ref: Table V, Appendix 1). Conversely, more optimistic growth estimates result when the buoyant population trends of the 1961-68 period are extrapolated into the future (ref: Table VII, Appendix 1). Neither of these sets of estimates appears to us likely to correspond to the probable effects of known Government policy and probable future conditions of an economic and demographic nature.

- The current NCC projections differ appreciably from various other forecasts, particularly those contained in the Ottawa Central Area Study (1969). In Section IV we discuss the reasons why - and to what extent - these previous forecasts are higher than these new projections.

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I POPULATION AND FEDERAL GOVERNMENT GROWTH IN THE PAST

(reference: Tables I, II and III, Appendix 1).

- Prior to 1940, growth of population in the Capital Region was slow by comparison with the post-war period. For example, between 1921 and 1940, annual rates of growth seldom exceeded 1.5%. These rates reflect major characteristics of the period: the pre-industrial economy of Canada, the depression, and the relatively minor role of the Federal Government in the economy.
- Wartime and post-war expansion resulted in two significant trends affecting the growth of the Capital Region: a great increase in the role of Government, in concert with industrialization and increasing demands for economic, welfare and national security programmes, and a dramatic movement of rural population and new Canadians to urban centres.

As a consequence, population in the Capital Region rose steadily, frequently at very high rates (e.g. 4.2% per year compounded annually between 1956 and 1961). Newly-created job opportunities in the public service had the effect of drawing a great many newcomers to the Region. In addition, the post-war 'baby boom' rapidly expanded the size and number of families and resulted in phenomenal demands for housing and community services during the late fifties and sixties. Rising incomes combined with the expansion of federal employment to generate new jobs in the private sector, which in turn boosted rates of population growth. Moreover, some new employment opportunities were offered by the expansion of existing industries (e.g. pulp and paper), and by the influx of a number of manufacturing and research-oriented industries.

- In the late sixties a tapering off occurred in the rate of growth of population. It dropped from 3.4% annually in 1961-62 and 1964-65, to 2.7% in 1966-67 and 2.0% in 1967-68. These lower growth rates reflect both a significant decline in birth rates and a levelling-off of the growth in service industries which had come with the surge of government expansion and rising incomes during the late fifties and early sixties.
- During the past twenty-five years, Federal Government employment has been the prime generator of growth in the Ottawa-Hull metropolitan area. More recently, from 1961 to 1968, employment rose from 49,831 to 63,200. During that period the growth rate of federal employment was of the order of 3.5% compounded annually. Population growth rate for the same period was 2.8% compounded annually.
- In the summer of 1969, the Government announced a plan to reduce spending and stop the expansion of public service employment - a main element in its battle to curb inflation.

II FACTORS INFLUENCING FUTURE GROWTH OF THE CAPITAL REGION

- In summary, the factors most directly influencing future population and economic growth of the Capital Region are likely to be:
 - (a) federal government employment growth;
 - (b) locational attraction of the Capital area for investments in new manufacturing and service industries;
 - (c) national demographic trends, as for example: migration from rural areas to urban centres; declining birth and death rates; migration between urban centres in response to job opportunities;
 - (d) trends in labour participation ratios (the proportion of the population in jobs), which for practical purposes, means the changing proportion of females of working age who take up employment.
- Although less directly influential, additional factors will come into play. These are:
 - rising incomes;
 - 'scale effects' produced by increasing size of the urban community;
 - shorter work week and increasing leisure time;
 - technological changes affecting employment in industry and services;

The way in which these factors are likely to influence growth in the Region are discussed in the following paragraphs.

- Government policy is clearly directed to holding the level of public service employment in the Region at or below the 1968 level of 63,200 jobs. How long this will last is difficult to say. We believe that the freeze will last at least until 1972. It might be argued that after 1972, growth in employment will revert to a pattern similar to that of the fifties and sixties (in effect, that the tendency would be for departments of government to re-establish their accustomed growth rates). However, there are compelling reasons for believing such will not be the case.

The Government is firmly committed to fighting inflation, an affliction which is now clearly becoming chronic. This will require a special responsibility on the part of the Government to restrain spending and hold down federal employment for an indefinite time in the future.

Secondly, there is evidence of increasing government commitment to some decentralization of its activities to the various regions of Canada. The economic and social forces which have given rise to

greater decentralization are likely to continue for an extended period. While we do not foresee major shifts (such as the removal of departmental headquarters from Ottawa), it is however, likely that future government action in this direction will have some adverse effects on the rate of employment growth in the Region.

Finally, while the role of government in the economic system is expected to continue to increase in the future, provincial and local administrations, as in the recent past, will likely assume greater responsibilities for providing the services. Hence, even if national programmes of the Federal Government are expanded, the employment consequences would be increasingly shifted to government administrations other than federal (although, to the extent they are shifted to municipal authorities, the Capital Region would not be affected).

- In conclusion, we consider it unlikely that in the post 1972 period Federal Government employment in the Capital Region will increase at rates experienced in the very recent past. We believe it reasonable to assume a growth rate approximating about half that experienced in the buoyant period of the sixties or at about the same rate as in the early fifties. The rate is expected to be higher in the 1972-76 period (about 2%), thereafter dropping progressively until it reaches about 1.5% to 1.3% between 1986 and 1996. We postulate that, on average over the 24 year period (1972-96), the annual compound growth rate will be 1.6%.
- Locational attraction. The Capital is geographically situated between the two most important industrial centres of Canada - Toronto and Montreal. Because these two metropolitan areas are powerful magnets of investment and gigantic pools of skilled labour, they attract the lion's share of industrial growth in Eastern Canada. Despite its relatively favourable location with respect to markets, and an attractive physical environment, the Capital is still not viewed by most industries as a good place to locate. Lack of a satisfactory pool of labour skills needed by manufacturing industries, and an underdeveloped transport and communications system linking it to main markets and cities hurt the Region's industrial growth prospects.

In this connection, it is useful to note that Ottawa compares with no other capital city of the world. Historically, it was never a thriving commercial or industrial centre, such as London and Copenhagen. It was not created as an isolated or 'artificial' Capital such as Canberra or Brasilia. And it bears little comparison to Washington, which supports governmental-industrial functions directly related to a population and an economy whose scale and complexity far exceed current or foreseeable Canadian levels. Thus it would be inappropriate to draw a picture of the Region's future growth by reference to extraneous models, whether they be Canadian cities or other national capitals.

Nevertheless, some growth potentials are clearly evident in recent trends. The number of national associations and commercial headquarters locating in Ottawa is increasing. Such organisations, while they may bring with them a relatively low complement of employees, do create demands for services and commodities which in turn, have additional job-creating effects. Some optimism is certainly also warranted in respect of research and development industries which benefit from proximity to government and its scientific and professional services. However, it should not be overlooked that Ottawa is in direct competition for these industries with cities where universities, industrial management skills and financial and cultural institutions are more highly developed or more readily available.

- Construction. In respect to private sector employment growth, one might make special note of the impact of Federal expansion on the construction industry in the 1960's. Apart from its impact on housing for public servants, the Government has been a prime mover of construction through its office space requirements. In recent years, these requirements generated an abnormal boom, whereas it now appears likely that a pronounced drop in the construction of office buildings will occur in the seventies. Public reference has been made to this by the Minister of Public Works. Housing construction will also be affected adversely by slower government employment growth. However, this could be largely offset by strong housing demands created by (a) the arrival at marriageable age of the large group of babies born in the immediate post war period; and (b) the impact of rising incomes on the demand for private accomodation by young employees. It is likely therefore, that over the medium term, the number of jobs in construction will not likely grow appreciably.
- In summary, potentials for new employment opportunities in other industries are uncertain, at least over the near term. Guarded optimism may be justified in respect to attracting a selected range of industries or institutional bodies. Success in attracting new industries in any significant numbers will be dependent upon aggressive development programmes and investment inducements rather than the limited inherent locational advantages of the region. It seems reasonable to conclude therefore, that the overall regional economy will continue to grow mainly in response to the pace of Government employment.
- The influence of demographic trends will be most felt in the declining birth rate. In 1951, the birth rate in Canada was 27.2 per thousand population. By 1957 it had attained a level of 28.2, but has since fallen steadily and rapidly to 17.6. In Ontario and Québec, the declines in birth rates since 1957 have been from 26.8 to 17.3 and from 29.2 to 16.3, respectively. These declines parallel world-wide trends in the advanced countries. Between 1957 and 1968, the over-all rate of natural increase (which takes into account deaths and births) dropped from 18.1 to 9.7 in Ontario and from 22.1 to 9.6 in Québec. We believe it correct to assume that birth rates will stabilize roughly at these low levels and continue in the foreseeable future, thus appreciably affecting the rate of population growth for the next ten to fifteen years.

Undoubtedly, some migration into the Capital from the rural hinterland will continue. While such migration is normally induced by urban job opportunities, even under conditions of scarce opportunities migration will persist as people continue to seek out the amenities, services and welfare benefits of the urban community. Since the population of the Capital hinterland is not appreciable in numbers and because the pool of surplus labour has been steadily depleted, this component of growth can be considered negligible in the long run (particularly since the Capital Region contains itself a large rural area).

Migration into the Capital from other cities was most pronounced when the demand for professional, administrative and trade skills were particularly high. This demand is expected to drop off considerably as a result of Government restraints on employment. It is also reasonable to conclude that progressively over the next ten to fifteen years, such job opportunities as are created by the public service will be filled to a greater extent by residents of the Capital Region entering the labour market. Thus, net migration into the Capital is not likely to be as pronounced as it has been over the past ten years.

- The participation ratio (percentage of the total population in the labour force) has been rising steadily. For example, participation in the Capital area rose from 35.1% in 1961, to 37.8% in 1968. There is little reason to believe it will drop back in the future - indeed, expectations are that it will continue to rise. (By way of comparison, other Canadian cities are already in advance of the current local situation, as seen in the following 1961 ratios: Toronto, 43.3%; Montreal, 38.3%; Winnipeg, 40.8%).

Rising participation ratios are essentially attributable to more and more women entering the labour market. The trend of employed women in Canada is rising - in 1951, women accounted for 22% of all employees, whereas in 1968, they accounted for 31.7%. The comparable figure in Sweden is presently close to 40%.

Striking evidence of high or rising participation ratios in Canada and among more advanced industrial societies is shown in Table IX, Appendix 1. From this evidence we infer a future of rising ratios for the Capital Region economy, particularly since the nature of the economy here is more conducive to female employment than in other cities where basic employment derives from manufacturing or heavy industry.

The unmistakable trend towards higher ratios has significant consequences in population terms - the more women working, the higher the ratio and as a result, the lower the population required to fill job opportunities. More women working has a double effect, in that fewer babies are born and population growth through natural forces is reduced.

- In conclusion, we believe it reasonable to assume a steadily increasing participation ratio over the next 24 years, from its present level of 37.8% to at least 40.0% in 1996. In the light of ratios already pertaining in other similar economies, we consider the magnitude of these assumed ratios to be on the conservative side.
- Of the group of "miscellaneous" factors, the more important seem to be rising incomes and the 'scale effects' of urbanization, which have the effect of creating jobs in retail and service industry sectors. As cities grow in size and affluence and approach the million population mark, they create a set of opportunities largely unrelated to the 'basic' employment or 'productive' components of the local economy. New services of an entertainment, educational, cultural or consumer commodity nature come into being, thus contributing to growth. This self-generating process will, therefore, likely offset to some degree the declining growth forces discussed earlier.
- Although the population will be comprised of an increasing number of persons over age 60, the number of people retiring from the labour force will not necessarily rise in direct proportion. There is a tendency for more and more retirement age persons to remain employed, either partially or full time, or to take up second careers which extend into advanced age. We believe therefore, that on balance, the retirement factor will exercise but a minor influence on job opportunities and thus, on population growth.

A positive growth influence could be increasing leisure time brought about by a shorter work week and longer paid vacations. Appreciable reduction of the work week (e.g. from 40 hours to 30 hours) could conceivably produce certain demands for additional employees in the labour force in order to maintain levels of service expected or required. However, we would expect most of these new demands to be filled through increased labour participation of the population (e.g. females) and only to a minor extent by newcomers to the region.

- In summary: over the long term, increase of Federal Government employment will be moderate. Jobs created by new industries or institutions locating in the Region will likely have only modest positive effects on growth. There will be higher participation labour ratios (particularly of women) and increased leisure, producing a negative influence on population growth due to in-migration generated through job opportunities. Population growth through natural increase will also be profoundly affected by low birth rates. On the other hand, some positive growth forces will be felt through rising incomes and the phenomenon of increasing urbanization.

III ESTIMATES OF FUTURE GROWTH

In this section of the report employment and population are projected on the basis of assumptions and reasoning contained in Section II. These are then compared in Section IV to forecasts prepared by others in the recent past.

- The first set of estimates concerns Federal Government employment, by five year periods through to 1996. Growth is assumed to occur only after 1972, at an average rate of 1.6% per year, cumulative over the 24 year period.

The rate of growth is expected to be slightly higher during the 1972-76 period (about 2%), thereafter dropping progressively until it reaches about 1.5% to 1.3% between 1986 and 1996.

As shown in Table IV, from a level of 63,200 employees in 1968 and 1972, Federal Government is estimated to grow to 74,580 in 1981, to 80,900 in 1986 and eventually to 93,550 by 1996.

- Using government employment as a basis, two sets of 'other' employment are arrived at. The first set adopts a constant employment ratio of 2.544 between the two sectors - i.e. for every government job there will, on average, always be 2.544 jobs in the private sector. This ratio has been calculated from 1968 employment conditions.

A second possible set of 'other' employment is estimated by using a non-government to government ratio which increases with time. This method postulates conditions leading to a more diversified Regional economy (i.e. less dependence on the Federal Government). It is difficult to say what could be the precise nature of changes in this ratio under conditions of greater diversity, but we believe that a step-up of about 5% in the ratio provides a reasonable long term assumption.

The two sets of estimates are shown in Tables V and VI. It is seen that with a constant ratio of 2.544 non-federal to federal jobs, total employment in the Region would rise from 224,000 in 1968 to 331,550 in 1996. With the ratio stepping up progressively from 2.544 to 2.675, total employment could reach 343,750 by 1996.

- Population is then estimated according to two methods. By the first, figures are derived by applying the expected labour participation ratios against the two sets of employment. This yields two estimates of population for each future date, as shown in Tables V and VI, Appendix 1.

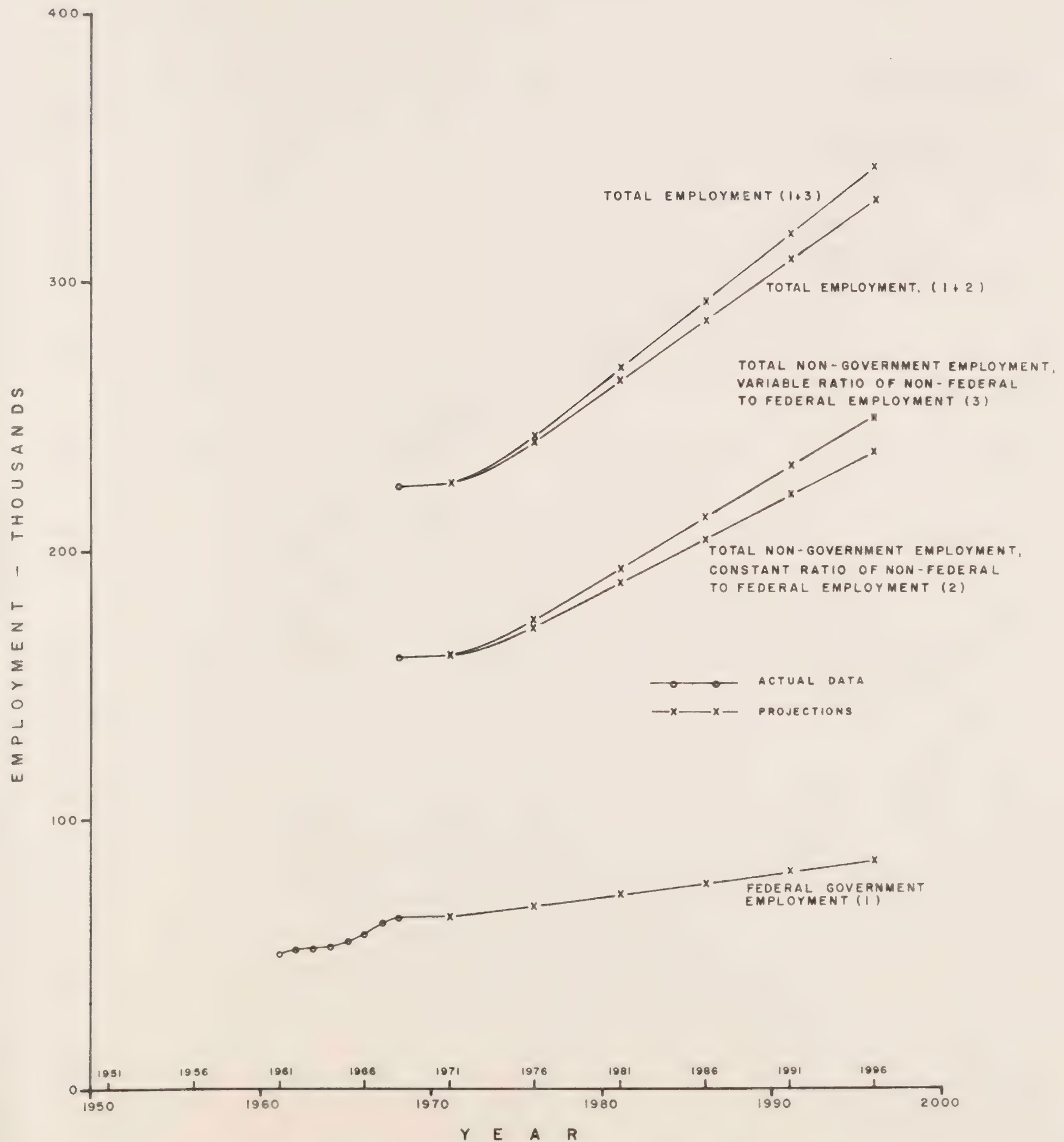
By the second method, population is projected by simply extrapolating recent growth trends - without reference to the employment base or the expected natural increase factors. In effect, this method simulates for the future the buoyant growth conditions of the period 1961-68. The resulting population estimates (Table VII) should

therefore be considered as too 'optimistic' in the light of foregoing discussions.

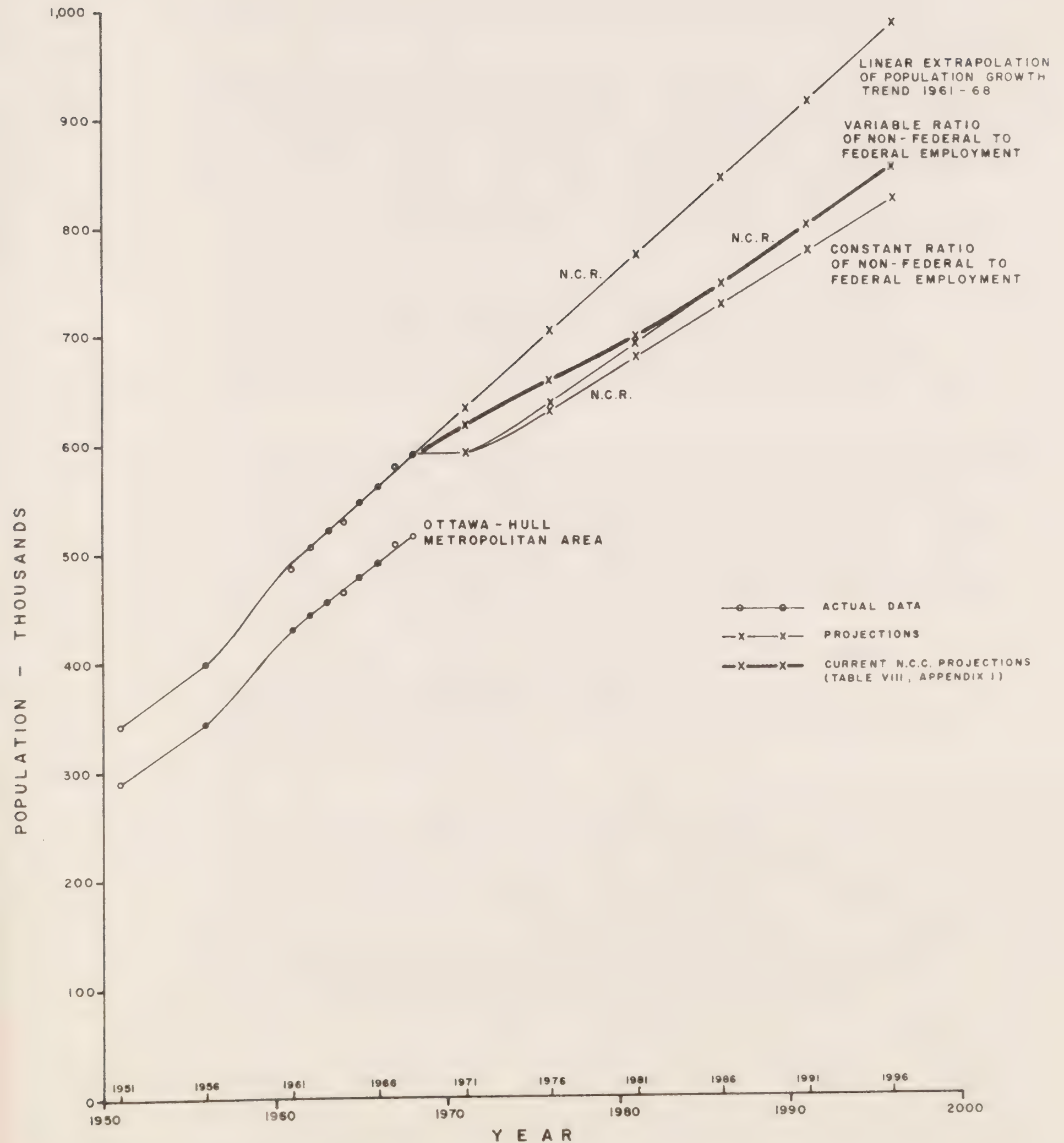
- It should be noted that 'cohort survival' projections constitute a third possible method of forecasting the regional population. This method would have particular utility if age group projections were being sought, but then, only if migration rates could be satisfactorily predicted as a function of employment opportunities. The view taken in this report is that the major determinant of total regional population will be the level of Federal Government employment. For this reason, no attempt was made at this stage to estimate population by the cohort survival technique.
- Referring to Tables V and VI, the two sets of population figures derived from total employment yield, for example, 681,400 and 692,500 in 1981 and 829,000 and 859,200 in 1996. Thus, when it is assumed the regional economy will become more diversified, the level of population is about 30,000 higher at the end of the forecast period.
- If very recent population growth patterns are extrapolated, the estimates for 1981 and 1996 become 778,950 and 992,700, respectively (Table VII). The 1996 estimate by this method exceeds the lowest population estimate, arrived at by derivation from total employment, by 163,700 persons or approximately 20%.
- All sets of employment and population projections are shown on the accompanying Charts 1 and 2.
- Table VIII, Appendix 1, indicates the population projections which we believe most likely to correspond to future conditions. These figures match the middle curve on Chart 2.

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EMPLOYMENT IN THE NATIONAL CAPITAL REGION



POPULATION GROWTH IN THE NATIONAL CAPITAL REGION AND THE OTTAWA - HULL METROPOLITAN AREA



IV PREVIOUS FORECASTS AND ESTIMATES BY CONSULTANTS

Since 1963, four employment and population forecasts on the Capital Region have been prepared. These are summarized in Tables I, II and III, Appendix 2. These projections were made either for the area defined as the National Capital Region or a smaller area encompassed by the Ottawa-Hull Area Transportation Study (OHATS). The boundaries of these areas are shown on the map in Appendix 2.

- The Economic Prospects report (1963), prepared by Larry Smith and Company, contains both employment and population projections. The estimates of federal employment growth were supplied to these consultants by the National Capital Commission. At the time, it seemed reasonable to assume that the rate of growth would be about 2.3% compounded annually (as compared to 1.6% used in current NCC projections). Private sector employment projections were made by the consultants on the basis of trend analysis and various assumptions as to the outlook for each sector of the local economy.

Population forecasts were made by two methods - cohort survival and derivation from projected total employment. In the first method, birth rates were assumed to drop off only slightly in the future (from 27.0 in 1961-71, to 26.0 in 1981-86), whereas present trends indicate a much more dramatic decline (see Section II).

The employment and population projections contained in Economic Prospects are higher than the estimates in Section III of this report. For example, population in 1986 is given as 880,000, which is approximately 17% higher than the current NCC projection for the same year. Federal employment is also considerably higher, by approximately 20%. These higher projections result mainly from more optimistic assumptions in respect of Federal Government growth, from higher anticipated birth rates and from lower labour participation ratios.

- Growth estimates contained in the Statistical Review and the Ottawa-Hull Area Transportation Study are based upon, or derived from, the Economic Prospects report. As such, the assumptions governing estimates in these two documents are very much the same as those in the latter report.
- More recent growth forecasts are found in the Ottawa Central Area Study by Hammer, Greene, Siler Associates (1969). In this case, the consultants used a long term federal employment growth rate of 3.2% compounded annually in the post 1976 period. A higher rate of 3.5% compounded annually was used for the short term, between 1968 and 1976. The report offers no comment on the assumptions underlying these growth rates, nor is adequate reasoning offered with respect to growth anticipated in non-government sectors (e.g. research and development industries) of the Capital Region economy.

In estimating future employment in other sectors of the economy, the consultants assume that the aggregate ratio of non-federal to federal employment will rise in the future. The report shows a continuing increase to 1996 in the retail, service and other sectors according to the same rates of growth experienced in the 1963-68 period. Secondly, it was assumed there will be a constant ratio of manufacturing employment to federal employment, based on the consultants' estimate of the 1968 level. Finally, population growth was derived by applying a constant labour participation ratio of 34.77% to total employment over the entire forecast period.

Both employment and population figures in the Central Area Study differ from the current NCC projections because of three basic factors. The consultants accept very high federal employment growth, which is unrealistic in the light of present government policy. Next, they use a base year (1968) labour force figure which is incorrect. Because their figure of 200,090 is lower than the actual, the labour participation ratio of 34.77% which they calculate is unrealistically low and results in higher population estimates in the forecast period. Finally, the assumption that participation ratios will remain constant to 1996 seems untenable in the light of trends discussed in Section II of this report.

Comparing population projections of the Central Area Study to those contained in Table VIII, Appendix 1 (current NCC projections), we see that the former are approximately 73% higher at the end of the forecast period: 1,492,520 in 1996 compared to 860,000.

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APPENDIX 1: Statistical Tables and
Estimates for Sections I, II and III

Table I	Population of the National Capital Region and Certain Areas Within It
Table II	Percentage Annual Increases in Population for the National Capital Region and Areas Within It
Table III	Federal Government Employment, National Capital Region
Table IV	Capital Region Federal Government Employment Growth, 1968-1996
Table V	Capital Region Population Growth - Based on Constant Ratio of Private Sector to Federal Government Employment, 1968-1996
Table VI	Capital Region Population Growth - Based on Increasing Ratio of Private Sector to Federal Government Employment, 1968-1996
Table VII	Capital Region Population Growth - Based on Straight Line Extrapolation of Trend in the Period 1961-68
Table VIII	Current N.C.C. Population Forecast for the National Capital Region
Table IX	Participation Ratios Based on Percentage of Total Population in the Civilian Employed Labour Force

Table I: Population of the National Capital Region and Certain Areas Within It

Area (a)	1941	1951	1956	1961	1962	1963	1964	1965	1966	1967	1968
N.C.R.	280,800 ^(b)	343,000 ^(b)	400,200 ^(b)	492,200 ^(c)	509,000 ^(c)	523,000 ^(c)	534,000 ^(c)	552,000 ^(b)	565,900 ^(b)	581,200 ^(b)	592,800 ^(b)
Metro ^(b)	233,600 ^(d)	292,500 ^(d)	345,500 ^(d)	429,700	446,000	458,000	468,000	482,000	494,500	508,000	518,000
Ottawa ^(b)	154,950 ^(e)	202,045 ^(f)	222,129	268,206	272,500	276,761	280,900	285,675	290,741	295,900	300,500
Hull ^(b)	32,950	43,483	49,243	56,940	57,600	58,220	58,830	59,520	60,176	60,816	61,456

Note: (a) For area boundaries, refer to map attached in Appendix 2.

(b) Census figures and estimates from Census figures.

(c) D.B.S. figures for Metro, remainder of N.C.R. from assessment records.

(d) 1941, 1951, 1956, and 1961 Metro Census figures based on 1966 boundaries.

(e) Figures conform to 1941 Ottawa boundary.

(f) Parts of Nepean and Gloucester annexed in 1956.

Source: D.B.S. Census figures and estimates, Ontario Municipal Directory and Québec Municipal Guide.

Table II: Percentage Annual Increases^(b) in Population for the National Capital Region and Areas Within It

Area	1941-51	1951-56	1956-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
N.C.R.	2.0	3.1	4.2	3.4	2.7	2.1	3.4	2.5	2.8	2.0
Metro	2.3	3.4	4.4	3.8	2.7	2.2	3.0	2.6	2.9	2.0
Ottawa	2.7	1.8	3.9 ^(a)	1.6	1.6	1.5	1.7	1.8	1.6	1.6
Hull	2.8	2.5	2.9	1.2	1.1	1.1	1.2	1.1	1.2	1.1

Note: (a) Parts of Nepean and Gloucester annexed in 1956.

(b) Rates of growth, compounded annually (cumulative).

Source: Table I

Table III: Federal Government Employment, National Capital Region

	1961	1962	1963	1964	1965	1966	1967	1968
Federal Employment	49,831	51,357	51,633	52,399	54,384	57,234	60,703	63,200
% Change	+ 3.1	+ 0.5	+ 1.5	+ 3.8	+ 5.2	+ 6.1	+ 4.1	

Source: Federal Government Employment in Metropolitan Areas 1961 to 1967, Report No. 72-205 Dominion Bureau of Statistics, Government Division, except for 1968 figure, which is a D.B.S. unpublished estimate.

Table IV: Capital Region Federal Government Employment Growth, 1968-1996

	1968	1971/1972	1976	1981	1986	1991	1996
Federal Employment	63,200	63,200	68,260	74,580	80,900	87,300	93,550

Note: (a) Federal employment level assumed to be stable for the period 1968-1972.

(b) Growth of employment after 1972 is assumed to occur at an average annual rate of 1.6% per year, compounded annually. In the early forecast period the annual compound rate is assumed to be 2%, dropping progressively to 1.3% annually between 1986 and 1996.

Table V: Capital Region Population Growth - Based on Constant Ratio of Private Sector to Federal Government Employment, 1968-1996

	1968	1971	1976	1981	1986	1991	1996
Non-Federal to Federal Employment Ratio	2.544	2.544	2.544	2.544	2.544	2.544	2.544
Projected Federal Employment	63,200	63,200	68,260	74,580	80,900	87,300	93,550
Non-Federal Employment	160,800	160,800	173,650	189,730	205,800	222,000	238,000
Total Employment	224,000	224,000	241,910	264,310	286,700	309,300	331,550
Participation Ratio	37.8	37.8	38.3	38.8	39.1	39.6	40.0
Regional Population	592,800	592,800	631,500	681,400	733,500	781,000	829,000

- Note: (a) Estimate of 1968 non-federal to federal employment ratio is based on trend analysis of economic sectors of the regional economy and comparative analysis of other Canadian metropolitan areas.
- (b) Total employment is derived on the basis of a constant non-federal to federal employment ratio, which could result if the nature of the local economy remains essentially unchanged.
- (c) Participation ratio is the percentage of population in the employed labour force. Ratios for Ontario and Québec were calculated using D.B.S. estimates for labour force and population. The labour force estimates excluded the Armed Forces; the population estimates included the Armed Forces.
- (d) Participation ratios for the National Capital Region were estimated by weighting the ratios in Ontario and Québec, for the period 1961-1968, and taking into consideration expected increases in participation during the period to 1996.

Table VI: Capital Region Population Growth - Based on Increasing Ratio of Private Sector to Federal Government Employment 1968-1996

	1968	1971	1976	1981	1986	1991	1996
Non-Federal to Federal Employment Ratio	2.544	2.558	2.580	2.603	2.627	2.650	2.675
Projected Federal Employment	63,200	63,200	68,260	74,580	80,900	87,300	93,550
Non-Federal Employment	160,800	161,690	176,240	194,120	212,510	231,240	250,200
Total Employment	224,000	224,890	244,500	268,700	293,410	318,540	343,750
Participation Ratio	37.8	37.8	38.3	38.8	39.1	39.6	40.0
Regional Population	592,800	595,000	638,400	692,500	750,500	804,200	859,200

- Note: (a) Estimate of 1968 non-federal to federal employment ratio is based on trend analysis of economic sectors of the regional economy and comparative analysis of other Canadian metropolitan areas.
- (b) Total employment is derived on the basis of an increasing non-federal to federal employment ratio which could result if the regional economy became more diversified.
- (c) Participation ratio is the percentage of population in the employed labour force. Ratios for Ontario and Québec were calculated using D.B.S. estimates for labour force and population. The labour force estimates excluded the Armed Forces; the population estimates included the Armed Forces.
- (d) Participation ratios for the National Capital Region were estimated by weighting the ratios in Ontario and Québec, for the period 1961-68, and taking into consideration expected increases in participation during the period to 1996.

Table VII: Capital Region Population Growth - Based on Straight Line Extrapolation of Trend in the Period 1961-68.

	1971	1976	1981	1986	1991	1996
Population	636,450	707,700	778,950	850,200	921,450	992,700

- Note: Estimated using linear least square fit.
The equation fitted to the 1961-68 figures is : $\text{Population} = -375,300 + 14,250 (t - 1900)$, where t is the given year.

Table VIII: Current N.C.C. Population Forecast for the National Capital Region (see Section, Summary and Projections)

	1971	1976	1981	1986	1991	1996
Population	620,000	660,000	705,000	750,000	805,000	860,000

Note: Based on discussion and assumptions indicated in Section II of this report.

Table IX: Participation Ratios Based on Percentage of Total Population in the Civilian Employed Labour Force

Area	1961	1968
Canada	33.1	36.3
Ontario	36.4	38.7
Quebec	31.4	35.1
U.S.A.	35.8	37.7
Japan	46.6	47.9 (1967)
Sweden	47.6	46.9 (1967)
United Kingdom	45.1	44.3 (1967)
France	-	40.0 (1967)
West Germany	-	43.9 (1967)

Source: Handbook of Labor Statistics 1969, U.S. Department of Labor, Bureau of Labor Statistics, Table 152, page 391.

Monthly Bulletin of Statistics, Oct. 1969, United Nations, Table 1, pages 1-5.

Statistical Abstract of the United States, 1969, Table 307, page 211.

The Labour Force, Cat. No. 71,001 Monthly, Jan. 1969, D.B.S., Table 2, page 5.

Estimated Population of Canada by Province at June 1, 1969, Cat. No. 91-201, D.B.S.

Special Surveys Division, D.B.S.

APPENDIX 2: Tables of Forecasts and
Estimates for Section IV

Table I	Capital Region Population Projections From Previous Studies and Reports
Table II	Capital Region Federal Government Employment Projections From Previous Studies and Reports
Table III	Capital Region Employment Projections, Exclusive of Federal Government From Previous Studies and Reports
Map	National Capital Region and Relevant Statistical Area Boundaries Within It

Table I: Capital Region Population Projections From Previous Studies and Reports

Report	Study Area	Assumptions	1961	1962	1963	1966	1968	1971	1976	1981	1986	1991	1996
Economic Prospects Larry Smith December, 1963	N.C.R.	Based on employment estimates	-	487,000	-	526,000	-	576,000	647,000	721,000	810,000	-	-
		cohort survival	484,980	-	514,410	557,910	-	643,210	739,040	834,880	947,700	-	-
	OHATS	Based on the mean of above two figures	-	-	496,850	535,100	-	602,800	677,900	760,500	849,200	-	-
Statistical Review, December, 1964	N.C.R.	Based on Larry Smith Report	-	-	510,000	545,000	-	610,000	700,000	790,000	890,000	995,000	-
Ottawa-Hull Area Transportation Study, August, 1965	OHATS	Based on Larry Smith Report	-	-	496,800	525,000	-	600,000	675,000	750,000	851,000	-	-
Ottawa Central Area Study, Hammer, Greene, Siler Associates, June, 1969	OHATS (apparently)	Based on employment projections and constant participation ratio ^(a)	-	-	-	-	576,460	-	766,930	-	1,069,510	-	1,492,520

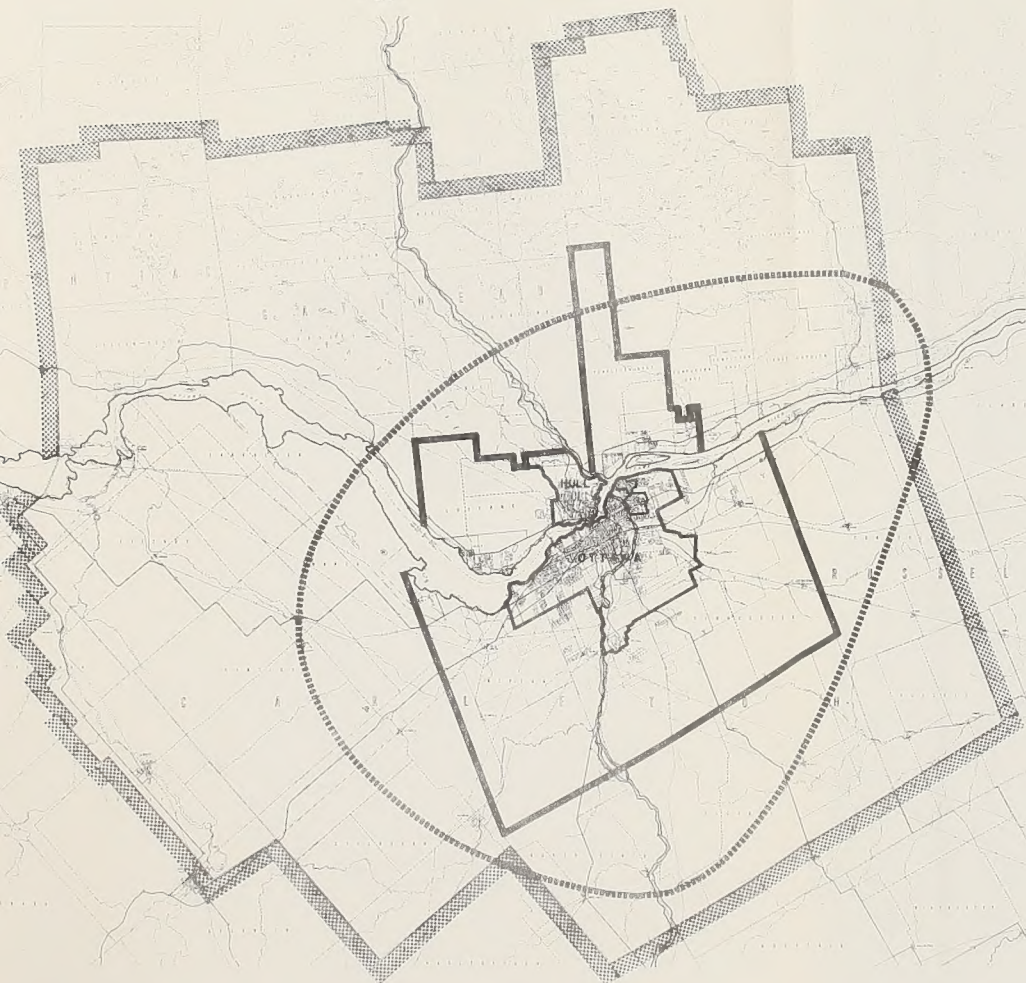
Note: (a) Participation ratio is the percentage of the population in the employed labour force.

Table II: Capital Region Federal Government Employment Projections From Previous Studies and Reports

Report	Study Area	1961	1962	1963	1966	1968	1971	1976	1981	1986	1991	1996
Economic Prospects - Larry Smith, December, 1963	N.C.R.	-	54,960	-	58,000	-	66,000	75,000	85,000	97,000	-	-
Statistical Review, December, 1964.	OHATS	-	-	54,671	58,618	-	65,565	75,735	86,085	97,290	-	-
Ottawa-Hull Area Transportation Study, August, 1965	OHATS	-	-	54,700	-	-	-	-	-	97,000	-	-
Ottawa Central Area Study, Hammer Greene Siler Associates, June, 1969.	OHATS	-	-	-	-	63,200	-	83,020	-	113,750	-	155,900

Table III: Capital Region Employment Projections, Exclusive of Federal Government From Previous Studies and Reports

Report	Study Area	1961	1962	1963	1966	1968	1971	1976	1981	1986	1991	1996
Economic Prospects - Larry Smith, December, 1963	N.C.R.	-	124,040	-	135,000	-	145,000	160,000	177,000	197,000	-	-
	OHATS	-	122,600	-	133,400	-	142,900	159,000	175,200	195,000	-	-
Statistical Review, December, 1964.	OHATS	-	-	117,096	133,762	-	144,150	161,215	177,945	196,385	-	-
Ottawa-Hull Area Transportation Study, August, 1965	OHATS	-	-	116,800	-	-	-	-	-	196,000	-	-
Ottawa Central Area Study, Hammer Greene Siler Associates, June, 1969.	OHATS	-	-	-	-	136,890	-	183,640	-	258,120	-	363,050



-  NATIONAL CAPITAL REGION
-  METROPOLITAN AREA
-  MUNICIPALITY (OTTAWA, HULL)
-  OTTAWA-HULL AREA
TRANSPORTATION STUDY

MAP OF THE NATIONAL
CAPITAL REGION



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